

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 08-103499

(43)Date of publication of application : 23.04.1996

(51)Int.Cl.

A61M 13/00

(21)Application number : 06-264652

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DOT:KK

(22)Date of filing : 04.10.1994

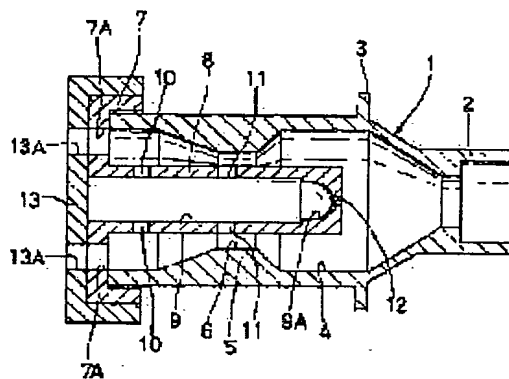
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(54) INHALATION TYPE MEDICINE ADMINISTRATOR

(57)Abstract:

PURPOSE: To enable a patient to easily inhale the powder medicine in a capsule and to efficiently diffuse and incorporate the powder medicine into suction air flow.

CONSTITUTION: This medicine administrator is constituted by providing a medicine administrator body 1 with an inhalation passage 4 axially penetrating this body, forming a throttling passage part 6 having a Venturi effect by a diameter reducing part 5 in mid-way of the inhalation passage 4, providing the inhalation passage 4 with a capsule housing cylinder 8 extending in an axial direction therein and opening the capsule housing part 9 in this capsule housing cylinder 8 into the throttling passage part 6 via suction holes 11. Then, the velocity of flow of the air passing the inhalation passage 4 is accelerated by the throttling passage part 6 simply when the patient lightly inhales the breath. Suction force is then generated in the respective suction holes 11 by the Venturi effect and the granular chemicals released via the respective suction holes 11 into the capsule housing part 9 are sucked into the inhalation passage 4. The patient is thus able to inhale the granular chemicals together with the air flow into the lung.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision
of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

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1. JP,08-103499,A(1996)

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平8-103499

(43) 公開日 平成8年(1996)4月23日

(51) Int. Cl. °

A61M 13/00

識別記号

F I

審査請求 未請求 請求項の数 6 F D (全10頁)

(21) 出願番号 特願平6-264652

(22) 出願日 平成6年(1994)10月4日

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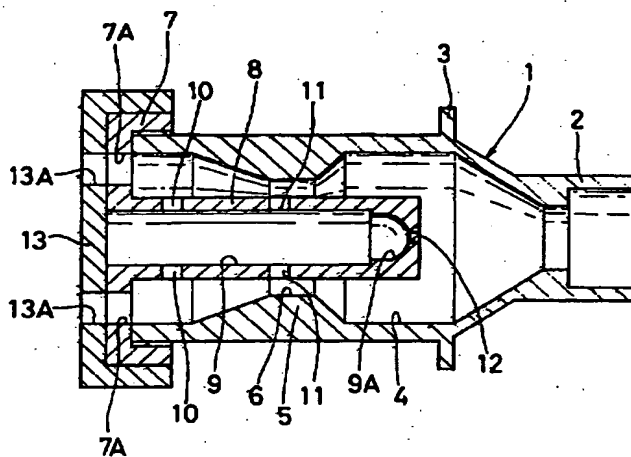
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(54) 【発明の名称】 吸入式投薬器

(57) 【要約】

【目的】 カプセル内の薬粉を容易に吸入できるようにし、かつ、薬粉を吸入空気流に効率良く拡散、混入させる。

【構成】 投薬器本体1に軸方向に貫通する吸入通路4を設け、吸入通路4の途中に縮径部5によってベンチュリ作用を有する絞り通路部6を形成し、吸入通路4内に軸方向に伸長するカプセル収容筒8を設け、カプセル収容筒8内のカプセル収容部9を吸出し孔11を介して絞り通路部6に開口させる構成とした。従って、患者は軽く息を吸込むだけで、吸入通路4を流通する空気の流速が絞り通路部6によって速められ、ベンチュリ作用により各吸出し孔11に吸引力を発生し、各吸出し孔11を介してカプセル収容部9内に放出された顆粒状薬品が吸入通路4内に吸出することができ、顆粒状薬品を空気流と共に肺内に吸入することができる。



【特許請求の範囲】

【請求項 1】 投薬器本体と、該投薬器本体を軸方向に貫通するように設けられた吸入通路と、該吸入通路の途中に位置して該吸入通路の通路径を絞るように形成された縮径部と、前記吸入通路の流出側に位置して前記投薬器本体に形成された吸入口と、前記吸入通路の流入側から前記縮径部に向けて軸方向に伸長して設けられ、内部がカプセル収容部となったカプセル収容筒と、前記吸入通路の流入側に位置して該吸入通路をカプセル収容部内と連通するように該カプセル収容筒に穿設された通気孔と、前記縮径部と対向する位置において、前記カプセル収容部内を前記吸入通路に連通するように前記カプセル収容筒に穿設された薬粉吸出し孔とから構成してなる吸入式投薬器。

【請求項 2】 投薬器本体と、該投薬器本体を軸方向に貫通するように設けられた吸入通路と、該吸入通路の途中に位置して該吸入通路の通路径を絞るように形成された縮径部と、前記吸入通路の流出側に位置して前記投薬器本体に形成された吸入口と、前記吸入通路の流入側から前記縮径部に向けて軸方向に伸長して設けられ、内部がカプセル収容部となったカプセル収容筒と、前記吸入通路の流入側に位置して該吸入通路をカプセル収容部内と連通するように該カプセル収容筒に穿設された通気孔と、前記縮径部と対向する位置において、前記カプセル収容部を前記吸入通路に連通するように前記カプセル収容筒に穿設された空気流入孔および薬粉吸出し孔と、該空気流入孔に向けて空気を噴出することによって薬粉吸出し孔からの薬粉の吸出しを補助するため、前記投薬器本体の外周側に設けられた送風部とから構成してなる吸入式投薬器。

【請求項 3】 前記投薬器本体とカプセル収容筒を一体に形成してなる請求項 1 または 2 に記載の吸入式投薬器。

【請求項 4】 前記投薬器本体には、前記吸入通路の流入側に位置して該吸入通路を開、閉するキャップを設けてなる請求項 1、2 または 3 に記載の吸入式投薬器。

【請求項 5】 投薬器本体と、該投薬器本体を軸方向に貫通するように設けられた吸入通路と、該吸入通路の途中に位置して該吸入通路の通路径を絞るように形成された縮径部と、前記吸入通路の流入側と外部を連通すべく前記投薬器本体に形成された吸気孔と、前記吸入通路の流出側に位置して前記投薬器本体に形成された吸入口と、前記投薬器本体の外周側に設けられたカプセル収容部と、前記吸入通路の流入側に位置して吸入通路を該カプセル収容部内に連通する通気孔と、前記カプセル収容部を縮径部の位置において前記吸入通路に連通するように該縮径部の径方向に形成され薬粉吸出し通路と、前記吸入通路の流入側に位置して前記投薬器本体に設けられ、縮径部によって絞られた吸入通路の絞り通路部に向けて空気を噴出する送風部とから構成してなる吸入式投

薬器。

【請求項 6】 前記吸入通路の流出側には、前記吸入口内で旋回流を形成する傾斜翼を設けてなる請求項 1、2、3、4 または 5 に記載の吸入式投薬器。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、例えば、患者の息の吸込みによって薬粉を肺内に投与するのに用いて好適な吸入式投薬器に関する。

【0002】

【従来の技術】一般に、喘息患者等の肺に薬品を投与する方法には、薬液を注射する方法、液体エアゾール噴霧器で吸引させる方法、カプセル内に充填された薬粉としての微細な顆粒状の薬品（例えば粒径 5 ～ 10 μm ）を当該カプセルを破断することによって吸引する方法等が用いられている。

【0003】これら喘息患者用の薬品投与方法のうち、カプセルに充填された顆粒状薬品を吸引する方法で用いられる吸入式投薬器は、吸入通路が形成された投薬器本体と、該投薬器本体の吸入通路に回転自在に設けられたカプセルホルダと、吸引時の空気流によって該カプセルホルダを回転するスクリュとから構成されたものが知られている。

【0004】そして、このように構成された吸入式投薬器を用いてカプセル内の顆粒状薬品を患者に投与するには、カプセルホルダにカプセルをセットし、この状態で投薬器本体を患者に銜えさせて息を吸込ませる。これにより、吸入通路内で空気流を発生させてスクリュを回転し、該スクリュと共にカプセルホルダにセットされたカプセルを回転させる。この結果、カプセル内の顆粒状薬品は、遠心力によって該カプセルに予め形成された穴部を介してカプセル外に放出され、空気流に混入して患者の肺に投与される。

【0005】

【発明が解決しようとする課題】ところで、上述した従来技術による吸入式投薬器では、患者が息を吸込むことにより空気流を発生させ、この空気流でスクリュを回転させてカプセル内の顆粒状薬品を放出させるようにしているから、ある程度勢いよく息を吸込まないとスクリュを回転させることができず、患者の負担が大きくなってしまう。特に、喘息等のように肺を患っている患者にとって非常に大きな負担となるという問題がある。

【0006】また、勢いよく息を吸込み過ぎてスクリュが高速回転した場合、遠心力によりカプセル内の顆粒状薬品は、カプセル内面に貼り付き薬品をカプセル外に放出することができず、カプセル内に薬品が残ってしまうという問題がある。

【0007】さらに、吸入通路内にカプセルホルダやスクリュを配設しているから、カプセルから放出された顆粒状薬品が該カプセルホルダやスクリュに付着し易く、

頻繁に洗浄作業を行わなくてはならないという問題がある。

【0008】本発明は上述した従来技術の問題に鑑みなされたもので、カプセル内の薬粉を容易に吸入できるようにし、かつ薬粉を吸入空気流に効率良く拡散、混入できるようにした吸入式投薬器を提供することを目的としている。

【0009】

【課題を解決するための手段】上述した課題を解決するために、請求項1の発明が採用する吸入式投薬器は、投薬器本体と、該投薬器本体を軸方向に貫通するように設けられた吸入通路と、該吸入通路の途中に位置して該吸入通路の通路径を絞るように形成された縮径部と、前記吸入通路の流出側に位置して前記投薬器本体に形成された吸入口と、前記吸入通路の流入側から前記縮径部に向けて軸方向に伸長して設けられ、内部がカプセル収容部となったカプセル収容筒と、前記吸入通路の流入側に位置して該吸入通路をカプセル収容部内と連通するように該カプセル収容筒に穿設された通気孔と、前記縮径部と対向する位置において、前記カプセル収容部内を前記吸入通路に連通するように前記カプセル収容筒に穿設された薬粉吸出し孔とから構成してなる。

【0010】また、請求項2の発明が採用する吸入式投薬器は、投薬器本体と、該投薬器本体を軸方向に貫通するように設けられた吸入通路と、該吸入通路の途中に位置して該吸入通路の通路径を絞るように形成された縮径部と、前記吸入通路の流出側に位置して前記投薬器本体に形成された吸入口と、前記吸入通路の流入側から前記縮径部に向けて軸方向に伸長して設けられ、内部がカプセル収容部となったカプセル収容筒と、前記吸入通路の流入側に位置して該吸入通路をカプセル収容部内と連通するように該カプセル収容筒に穿設された通気孔と、前記縮径部と対向する位置において、前記カプセル収容部を前記吸入通路に連通するように前記カプセル収容筒に穿設された空気流入孔および薬粉吸出し孔と、該空気流入孔に向けて空気を噴出することによって薬粉吸出し孔からの薬粉の吸出しを補助するため、前記投薬器本体の外周側に設けられた送風部とから構成してなる。

【0011】さらに、請求項3のように、前記投薬器本体とカプセル収容筒を一体に形成してもよい。

【0012】また、請求項4のように、前記投薬器本体には、前記吸入通路の流入側に位置して該吸入通路を開、閉するキャップを設けるのが好ましい。

【0013】さらにまた、請求項5の発明が採用する吸入式投薬器は、投薬器本体と、該投薬器本体を軸方向に貫通するように設けられた吸入通路と、該吸入通路の途中に位置して該吸入通路の通路径を絞るように形成された縮径部と、前記吸入通路の流入側と外部を連通すべく前記投薬器本体に形成された吸気孔と、前記吸入通路の流出側に位置して前記投薬器本体に形成された吸入口

と、前記投薬器本体の外周側に設けられたカプセル収容部と、前記吸入通路の流入側に位置して吸入通路を該カプセル収容部内に連通する通気孔と、前記カプセル収容部を縮径部の位置において前記吸入通路に連通するように該縮径部の径方向に形成され薬粉吸出し通路と、前記吸入通路の流入側に位置して前記投薬器本体に設けられ、縮径部によって絞られた吸入通路の絞り通路部に向けて空気を噴出する送風部とから構成してなる。

【0014】一方、請求項6のように、前記吸入通路の流出側には、前記吸入口内で旋回流を形成する傾斜翼を設けるのが好ましい。

【0015】

【作用】請求項1の発明の構成により、カプセル収容筒のカプセル収容部内にカプセルを収容した後、該カプセルを破断して内部の薬粉を該カプセル収容部内に放出する。この状態で吸入口から患者が息を吸込むと、吸入通路に空気流が発生しつつ縮径部によって流速が速まり、薬粉吸出し孔に吸引力（負圧）が発生する。これにより、カプセル収容部内に放出された薬粉は、前記薬粉吸出し孔から吸入通路内に吸出され、吸入空気流と共に肺に吸込まれる。

【0016】また、請求項2の発明の構成により、カプセル収容筒のカプセル収容部内にカプセルを収容した後、該カプセルを破断して内部の薬粉を該カプセル収容部内に放出する。この状態で吸入口から患者が息を吸込むと、吸入通路に空気流が発生しつつ縮径部によって流速が速まり、薬粉吸出し孔に吸引力が発生する。これにより、カプセル収容部内に放出された薬粉は、前記薬粉吸出し孔から吸入通路内に吸出される。また、このときに送風部を押圧して噴出空気を空気流入孔からカプセル収容部内に流入させ、該カプセル収容部内の薬粉を薬粉吸出し孔から押出すことにより、薬粉吸出し孔からの薬粉の吸出しを補助する。これにより、カプセル収容部内に放出された薬粉は、吸入通路側からの吸出しとカプセル収容部内からの押出しによって積極的に吸入通路内に放出され、吸入空気流と共に肺に吸込まれる。

【0017】さらに、請求項3のように、前記投薬器本体とカプセル収容筒を一体に形成することにより、部品点数の削減を図ることができる。

【0018】また、請求項4のように、投薬準備作業中にキャップで吸入通路の流入側を閉塞しておくことにより、カプセル収容部内に放出した薬粉の外部への飛散が防止される。

【0019】さらに、請求項5の発明の構成により、カプセル収容筒のカプセル収容部内にカプセルを収容した後、該カプセルを破断して内部の薬粉を該カプセル収容部内に放出する。この状態で吸入口から患者が息を吸込むと、吸気孔を介して吸入通路に空気が吸込まれ、該吸入通路に空気流が発生しつつ縮径部によって流速が速まり、薬粉吸出し通路に吸引力が発生する。これにより、

カプセル収容部内に放出された薬粉は、通気孔からカプセル収容部内に流入する空気と共に前記薬粉吸出し通路から吸入通路内に吸出される。また、このときに送風部を押圧し、吸入通路の絞り通路部に向けて空気を噴出することにより、絞り通路部を流通する空気流の流速をさらに速め、薬粉吸出し通路の吸引力を強める。これにより、カプセル収容部内に放出された薬粉は、薬粉吸出し通路から積極的に吸入通路内に吸出され、吸入空気流と共に肺に吸込まれる。

【0020】また、請求項6の構成により、カプセル収容部から吸出されて吸入空気流と共に吸入される薬粉は、傾斜翼による旋回流によって吸入空気流中に拡散された状態で混入する。

【0021】

【実施例】以下、本発明の実施例による吸入式投薬器を図1ないし図9に基づいて説明する。

【0022】まず、図1ないし図4に本発明の第1の実施例を示す。

【0023】図において、1はほぼ円筒状をなした投薬器本体を示し、該投薬器本体1の一侧は、後述する閉塞部材7によって閉塞されている。また、該投薬器本体1の他側は縮径されて吸入口2となり、該投薬器本体1の軸方向中間部には銑部3が径方向外向きに突設されている。

【0024】4は投薬器本体1を軸方向に貫通するように形成された吸入通路を示し、該吸入通路4の途中には、該吸入通路4の通路径を絞るように径方向内向きに突出して縮径部5が形成され、これにより吸入通路4の途中にベンチュリ作用を発生する絞り通路部6を形成している。

【0025】7は吸入通路4の流入側を閉塞するように投薬器本体1の一侧に着脱可能に螺着された閉塞部材、8は該閉塞部材7の中央部から吸入通路4内を他側に向けて軸方向に伸長して形成されたカプセル収容筒をそれぞれ示し、該カプセル収容筒8の先端は縮径部5よりも他側まで伸長している。また、該カプセル収容筒8内は、一側に向けて開口するカプセル収容部9となり、該カプセル収容部9の他端（底部）側は後述するカプセル14を保持する保持穴9Aとなっている。一方、前記閉塞部材7には、図2に示す如く、外部と吸入通路4とを

【0026】10、10はカプセル収容筒8の軸方向一側に位置して径方向に穿設された複数個の通気孔（2個のみ図示）で、該各通気孔10は、吸入通路4とカプセル収容部9内とを連通している。

【0027】11、11は各通気孔10と軸方向に離間し、カプセル収容筒8の途中に位置して該カプセル収容筒8の径方向に穿設された複数個の薬粉吸出し孔となる吸出し孔（2個のみ図示）で、該各吸出し孔11は、カ

プセル収容部9内を吸入通路4の絞り通路部6に開口するように配設されている。

【0028】12はカプセル収容筒8の先端に軸方向に穿設されたピン穴で、該ピン穴12には、投薬終了後にカプセル収容部9内に収容されたカプセル14を除去するためのピン（図示せず）が挿入される。

【0029】13は閉塞部材7を一側から覆うように設けられたキャップで、該キャップ13は、閉塞部材7に着脱可能、かつ回転可能に外嵌すると共に、閉塞部材7の各吸気孔7Aに対応する4個の連通孔13A、13A、…が形成されている。これにより、該キャップ13を回転させて図2に示すように閉塞部材7の各吸気孔7Aに各連通孔13Aを適合させることにより、吸入通路4と外部を連通した状態とし、この状態からキャップ13を任意の方向に回転させることにより、各吸気孔7Aと連通孔13Aとの位置をずらして吸入通路4の流入側を外部に対して閉塞するようになっている。

【0030】本実施例による吸入式投薬器は上述の如き構成を有するもので、次に、吸入式投薬器を用いた投薬手順について説明する。

【0031】まず、投薬準備作業として、投薬器本体1に閉塞部材7を螺着し、この状態でカプセル収容筒8のカプセル収容部9内に薬粉としての顆粒状薬品が充填されたカプセル14を保持穴9Aに嵌合するように一側から収容する。そして、カプセル収容部9内に収容したカプセル14を破断し、内部の顆粒状薬品を該カプセル収容部9内に放出させた後、閉塞部材7にキャップ13を嵌合し、カプセル収容部9を施蓋する。また、このキャップ13の取付け時には、図3に示したように、該キャップ13の各連通孔13Aを閉塞部材7の各吸気孔7Aとずらすように嵌合することにより、準備作業中に顆粒状薬品が外部に飛散するのを防止するようになっている。

【0032】次に、準備作業が終了したら、キャップ13を閉塞部材7に対して回転させて図1、図2に示すように各連通孔13Aを各吸気孔7Aに適合させ、吸入通路4の流入側を外部に開口させる。そして、この状態で患者が口で吸入口2を銜え、軽く息を吸込むと、図4に示すように各連通孔13A、各吸気孔7Aを介して吸入通路4内に外気が吸引されて流入する。

【0033】このときに吸入通路4内に流入する空気（吸入空気流）は、流入側（一側）から流出側（他側）に向けて流通しつつ、縮径部5に形成された絞り通路部6によって流速が速められ、ベンチュリ作用により該絞り通路部6に開口した各吸出し孔11に吸引力（負圧）を発生させる。

【0034】そして、各吸出し孔11に吸引力が発生することにより、カプセル収容部9内には、各通気孔10を介して空気が吸込まれ、この吸込まれた空気によりカプセル収容部9内に放出された顆粒状薬品が巻上げられ

る。この結果、顆粒状薬品は前記各吸出し孔11の吸引力によって該各吸出し孔11から空気と共に吸入通路4の絞り通路部6に吸出され、吸入通路4を流通する吸入空気流に混入して患者の肺内に吸込まれるから、患者は、軽く息を吸込むだけで顆粒状薬品を肺内に吸入することができる。

【0035】かくして、本実施例によれば、吸入通路4を流通する空気の流速を絞り通路部6によって速めることにより、ベンチュリ作用によって各吸出し孔11に吸引力を発生させ、該各吸出し孔11を介してカプセル収容部9内に放出された顆粒状薬品を吸入通路4内に吸出して空気流と共に肺内に吸入させるようにしているから、軽く息を吸込むだけで顆粒状薬品を効果的に吸入することができると共に、1回の吸入動作でカプセル14内の顆粒状薬品を効率よく吸入することができ、患者の負担を大幅に低減することができる。

【0036】また、ベンチュリ作用によって各吸出し孔11に吸引力を発生させて顆粒状薬品を吸出すようにしているから、従来技術で述べた吸入式投薬器に比較して各部への顆粒状薬品の付着を低減することができ、空気流に混入した顆粒状薬品を効率よく吸引できると共に、当該吸入式投薬器の洗浄作業を簡略化でき、取扱いを容易にすることができる。

【0037】さらに、ベンチュリ作用で顆粒状薬品を吸出すようにしているから、従来技術で述べた吸入式投薬器のようにカプセルホルダやスクリュを必要とせず、部品点数を少なくして組立作業性や製造コストの低減を図ることができる。

【0038】次に、図5および図6に本発明の第2の実施例を示す。なお、本実施例では前述した図1ないし図4に示す第1の実施例と同一の構成要素に同一の符号を付し、その説明を省略するものとする。

【0039】図において、21は本実施例による投薬器本体を示し、該投薬器本体21は、前記第1の実施例で述べた投薬器本体1とほぼ同様に、その一侧が閉塞部材7によって閉塞され、他側が縮径されて吸入口22となり、軸方向中間部に鏝部23が径方向外向きに突設されているものの、該投薬器本体21の外周側には、後述するベローズ31が取付けられる筒状の取付部24が径方向外向きに突設されている。

【0040】25は投薬器本体21を軸方向に貫通するように形成された吸入通路で、該吸入通路25の途中は、前記第1の実施例で述べた吸入通路4と同様に、縮径部26によって絞り通路部27となっている。

【0041】28は一方が取付部24内に開口し、他方が吸入通路25の絞り通路部27に開口するように投薬器本体21の縮径部26に径方向に形成された空気通路で、該空気通路28は、ベローズ31から供給される空気を後述する空気流入孔29に向けて噴出するものである。

【0042】29は各通気孔10と軸方向に離間し、カプセル収容筒8の途中に位置して該カプセル収容筒8の径方向に穿設された空気流入孔、30は該空気流入孔29と対向する位置でカプセル収容筒8の径方向に穿設された薬粉吸出し孔となる吸出し孔をそれぞれ示し、該空気流入孔29は空気通路28側となる図中上側に配設され、吸出し孔30は図中下側に配設されている。そして、該空気流入孔29、吸出し孔30はそれぞれカプセル収容部9を吸入通路25の絞り通路部27に連通している。

【0043】31は投薬器本体21の外周側に位置して取付部24に螺着された送風部としてのベローズで、該ベローズ31は外側から押圧されることにより、内部に貯えた空気を空気通路28を介して空気流入孔29に向けて噴出するものであり、これによってカプセル収容部9内の顆粒状薬品を吸出し孔30側に押圧して顆粒状薬品を積極的に吸出させ、患者が薬品を吸込むときの補助をするようになっている。

【0044】本実施例による吸入式投薬器は上述の如き構成を有するもので、次に、吸入式投薬器を用いた投薬手順について説明する。なお、投薬準備作業については前述した第1の実施例によるものと変わるところがないので省略する。

【0045】まず、準備作業が終了したら、キャップ13を閉塞部材7に対して回転させて各連通孔13Aを各吸気孔7Aに適合させ、吸入通路25の流入側を外部に開口させる。

【0046】そして、この状態で患者が口で吸入口2を銜え、軽く息を吸込むと、図6に示すように各連通孔13A、各吸気孔7Aを介して吸入通路25内に外気が吸引されて流入し、この流入した空気は絞り通路部27によって流速が速められ、ベンチュリ作用により該絞り通路部27に開口した吸出し孔30に吸引力（負圧）を発生させてカプセル収容部9内に放出された顆粒状薬品を吸入通路25側に吸出す。

【0047】また、患者は上述した息の吸込みと同時にベローズ31を押圧し、該ベローズ31から空気通路28を介して空気流入孔29に向けて補助空気流を噴出させ、この空気によってカプセル収容部9内の顆粒状薬品を吸出し孔30から押出すように押圧する。

【0048】この結果、カプセル収容部9内の顆粒状薬品は、吸出し孔30の吸引力によって吸入通路25側に吸出されると共に、患者が息を吸込むときの補助をすべく、ベローズ31から噴出され、空気流入孔29を介してカプセル収容部9内に流入する補助空気流により吸出し孔30に向けて押圧される。従って、顆粒状薬品は、各通気孔10と空気流入孔29とから流入する空気と共にカプセル収容部9内から前記吸出し孔30を介して吸入通路25内に積極的に吸出され、吸入通路25を流通する吸入空気流に混入して患者の肺内に吸込まれるか

ら、患者は、ベローズ31を押圧して補助空気流を発生させつつ軽く息を吸込むだけで顆粒状薬品を肺内に吸入することができる。

【0049】かくして、本実施例によれば、前述した第1の実施例の作用効果に加え、ベローズ31から空気通路28を介し、空気流入孔29に向けて補助空気流を噴出させ、この空気流でカプセル収容部9内の顆粒状薬品を吸出し孔30側に押圧して吸出しを補助するようにしているから、該カプセル収容部9内に放出された顆粒状薬品を吸入通路25側により積極的に吸出すことができ、患者の負担を一層低減することができる。

【0050】次に、図7ないし図9に本発明の第3の実施例を示す。

【0051】図において、41はほぼ円筒状に形成された本実施例による投薬器本体を示し、該投薬器本体1の一侧には、後述のベローズ52が取付けられている。また、該投薬器本体41の他側は縮径されて吸入口42となり、該投薬器本体41の軸方向中間部には鏑部43が径方向外向きに突設されている。

【0052】44は投薬器本体41を軸方向に貫通するように形成された吸入通路を示し、該吸入通路44の途中には、該吸入通路44の通路径を絞るように径方向内向きに突出された縮径部45が形成され、これにより吸入通路44の途中にベンチュリ作用を発生する絞り通路部46を形成している。

【0053】47、47、…は吸入通路44の流入側に位置して投薬器本体41に形成された複数の吸気孔で、該各吸気孔47は、図8に示す如く、周方向にほぼ等間隔で径方向に開口するように形成され、吸入通路44を外部に連通させている。

【0054】48は投薬器本体41の外周側に一体的に設けられた箱形状のカプセル収容部で、該カプセル収容部48の一側面は、開、閉可能な蓋部48Aとなり、該蓋部48Aを介してカプセル収容部48内にカプセル14を収容するようになっている。

【0055】49は吸入通路44の流入側をカプセル収容部48内に連通する通気孔で、該通気孔49は、各吸気孔47から吸入通路44に吸入される空気の一部をカプセル収容部48内に流入させるものである。

【0056】50は一方がカプセル収容部48内に開口し、他方が吸入通路44の絞り通路部46に開口するように投薬器本体41の縮径部45の径方向に形成された薬粉吸出し通路となる吸出し通路で、該吸出し通路50は、カプセル収容部48内に放出される顆粒状薬品をベンチュリ作用による吸引力で吸入通路44の絞り通路部46側に吸出すものである。

【0057】51、51、…は縮径部45を軸方向に貫通するように穿設された4本の補助通気路で、該各補助通気路51は、患者が息を吸込んだときの空気の流れを保証することにより、患者の負担を低減するものであ

る。

【0058】52は吸入通路44の流入側に位置して投薬器本体41に取付けられた送風部としてのベローズで、該ベローズ52は、投薬器本体41に螺着された円皿状の基部52Aと、該基部52Aに固着された蛇腹状のベローズ本体52Bと、前記基部52Aの中央から吸入通路44の絞り通路部46に向けて軸方向に伸長した吐出管52Cとから構成されている。そして、該ベローズ52は、そのベローズ本体52Bを押圧することにより、該ベローズ本体52B内に貯えた空気を前記吐出管52Cから絞り通路部46に向けて噴出し、該絞り通路部46での空気の流速を速めることでベンチュリ作用を高めて患者が薬品を吸込むときの補助をするようになっている。

【0059】一方、53、53は吸入通路44の流出側に位置して設けられた複数枚の旋回翼（2枚のみ図示）で、該各旋回翼53は、旋回方向に曲率をもって傾斜している。これにより、該各旋回翼53は、吸入通路44の流出側を流通する空気と顆粒状薬品を旋回させ、効果的に顆粒状薬品を空気流に拡散して混入するようになっている。

【0060】本実施例による吸入式投薬器は上述の如き構成を有するもので、次に、吸入式投薬器を用いた投薬手順について説明する。

【0061】まず、投薬準備作業として、蓋部48Aを開けてカプセル収容部48内にカプセル14を収容し、該カプセル収容部48内でカプセル14を破断した後に前記蓋部48Aを閉扉する。

【0062】次に、準備作業が終了したら、この状態で患者が口で吸入口42を銜え、軽く息を吸込むと、図9に示すように各吸気孔47を介して吸入通路44内に外気が吸引されて流入する。

【0063】このとき、各吸気孔47から吸入通路44内に流入する空気（吸入空気流）は、該各吸気孔47から吸入口42に向けて流通しつつ、絞り通路部46によって流速が速められ、ベンチュリ作用により該絞り通路部46に開口した吸出し通路50に吸引力（負圧）を発生させる。

【0064】そして、各吸出し通路50に吸引力が発生することにより、カプセル収容部48内には、通気孔49を介して空気が吸込まれ、この吸込まれた空気によりカプセル収容部48内に放出された顆粒状薬品が巻き上げられる。この結果、顆粒状薬品は前記各吸出し通路50の吸引力によって該各吸出し通路50から空気と共に吸入通路44の絞り通路部46に吸出される。

【0065】また、患者は上述した息の吸込みと同時にベローズ52のベローズ本体52Bを押圧し、吐出管52Cから絞り通路部46に向けて補助空気流を噴出させることにより、該絞り通路部46を流通する空気流の流速をより一層高めてベンチュリ作用による吸出し通路5

0の吸引力を増大し、吸込み時の補助をするようになっている。

【0066】従って、カプセル収容部48内の顆粒状薬品は、大きな吸引力を有する吸出し通路50により効率よく吸入通路44側に吸出され、該吸入通路44を流通する吸入空気流に混入して患者の肺内に吸込まれるから、患者は、ベローズ52を押圧しつつ軽く息を吸込むだけで顆粒状薬品を肺内に吸入することができる。

【0067】かくして、本実施例によれば、ベローズ52によって吸入通路44の絞り通路部46を流通する空気の流速をより一層速めることにより、吸出し通路50のベンチュリ作用による吸引力を高めることができるから、患者の負担をより低減することができる。

【0068】なお、前記第1の実施例では、カプセル収容筒8を投薬器本体1と別体に設け、閉塞部材7を介して該投薬器本体1に取付けるものとして述べたが、本発明はこれに限らず、例えば、図10に示す第1の変形例の如く、投薬器本体61の流入側に4個の吸気孔62A、62A、…を有する底部62を設け、該底部62の中央にカプセル収容筒63を設けることにより、投薬器本体61とカプセル収容筒63を一体に設けるようにしてもよい。また、第2の実施例についても同様である。

【0069】さらに、前記第3の実施例では、吸入通路44の流出側に複数枚の旋回翼53、53を設けるものとして述べたが、前述した図10に示す第1の変形例のように、第1の実施例で述べた吸入式投薬器の吸入通路4に前記各旋回翼53と同様の旋回翼64、64を設けるようにしてもよく、また、図11に示す第2の変形例の如く、第2の実施例で述べた吸入式投薬器の吸入通路25に旋回翼71、71を設けるようにしてもよい。

【0070】また、前記第2の実施例では、薬粉吸出し孔となる吸出し孔30を1個穿設した場合を例示したが、該吸出し孔30を複数個設けるようにしてもよい。

【0071】

【発明の効果】以上詳述した如く、請求項1の発明によれば、カプセル収容筒のカプセル収容部にカプセルを収容した後、該カプセルを破断して内部の薬粉を該カプセル収容部に放出する。この状態で吸入口から患者が息を吸込むことにより、吸入通路に空気流を発生しつつ縮径部によって流速を速め、薬粉吸出し孔に吸引力（負圧）を発生する。これにより、カプセル収容部に放出された薬粉を前記薬粉吸出し孔から吸入通路内に吸出し、吸入空気流と共に肺に吸込ませることができ、患者の負担を低減することができる。また、吸入通路によるベンチュリ作用で薬粉吸出し孔に吸引力を発生させて薬粉を吸出すようにしているから、1回の吸入動作で効率よく薬粉を吸入することができる上に、吸入投薬器の部品点数を削減して構成を簡略化することができ、組立作業性の向上や製造コストの低減を図ることができる。

【0072】また、請求項2の発明によれば、カプセル

収容筒のカプセル収容部にカプセルを収容した後、該カプセルを破断して内部の薬粉を該カプセル収容部に放出する。この状態で吸入口から患者が息を吸込むことにより、吸入通路に空気流を発生しつつ縮径部によって流速を速め、薬粉吸出し孔に吸引力を発生する。これにより、カプセル収容部に放出された薬粉を前記薬粉吸出し孔から吸入通路内に吸出す。また、このときに送風部を押圧して空気を噴出し、この補助空気流を空気流入孔からカプセル収容部に流入させ、該カプセル収容部内の薬粉を薬粉吸出し孔から押出すことにより、カプセル収容部に放出された薬粉を吸入通路側からの吸出しとカプセル収容部内からの押出しにより積極的に吸入通路内に放出し、吸入空気流と共に肺に吸込ませることができ、患者の負担をより低減することができる。また、吸入通路によるベンチュリ作用で薬品吸出し孔に吸引力を発生させて薬粉を吸出すようにしているから、1回の吸入動作で効率よく薬粉を吸入することができる。

【0073】さらに、請求項3のように、前記投薬器本体とカプセル収容筒を一体に形成することにより、部品点数の削減を図ることができ、製造コストの低減を図ることができる。

【0074】また、請求項4のように、投薬準備作業中にキャップで吸入通路の流入側を閉塞しておくことにより、カプセル収容部に放出した薬粉が外部に飛散するのを防止でき、所定量の薬品を確実に投与することができる。

【0075】さらに、請求項5の発明によれば、カプセル収容筒のカプセル収容部にカプセルを収容した後、該カプセルを破断して内部の薬粉を該カプセル収容部に放出する。この状態で吸入口から患者が息を吸込むことにより、吸気孔を介して吸入通路に空気を吸込み、該吸入通路に空気流を発生しつつ縮径部によって流速を速め、薬粉吸出し通路に吸引力を発生する。これにより、カプセル収容部に放出された薬粉を通気孔からカプセル収容部に流入する空気と共に前記薬粉吸出し通路から吸入通路内に吸出される。また、このときに送風部を押圧し、吸入通路の絞り通路部に向けて補助空気流を噴出し、絞り通路部を流通する空気流の流速をさらに速め、薬粉吸出し通路の吸引力を強めることにより、カプセル収容部に放出された薬粉を薬粉吸出し通路から積極的に吸入通路内に吸出させ、吸入空気流と共に肺に吸込ませることができ、患者の負担をより一層低減することができる。また、吸入通路によるベンチュリ作用で薬粉吸出し通路に吸引力を発生させて薬粉を吸出すようにしているから、1回の吸入動作で効率よく薬粉を吸入することができる。

【0076】また、請求項6の構成により、カプセル収容部から吸出されて吸入空気流と共に吸入される薬粉を傾斜翼による旋回流によって吸入空気流中に拡散して混入させることができるから、肺内に効率良く薬品を投与

できる。

【図面の簡単な説明】

【図 1】第 1 の実施例による吸入式投薬器を示す縦断面図である。

【図 2】閉塞部材の各吸気孔とキャップの各連通孔を適合させて開口させた状態の吸入式投薬器を示す左側面図である。

【図 3】閉塞部材の各吸気孔とキャップの各連通孔の位置をずらして閉塞した状態の吸入式投薬器を示す図 2 と同様位置の左側面図である。

【図 4】カプセル収容部内の顆粒状薬品を吸引している状態の吸入式投薬器を示す図 1 と同様位置の縦断面図である。

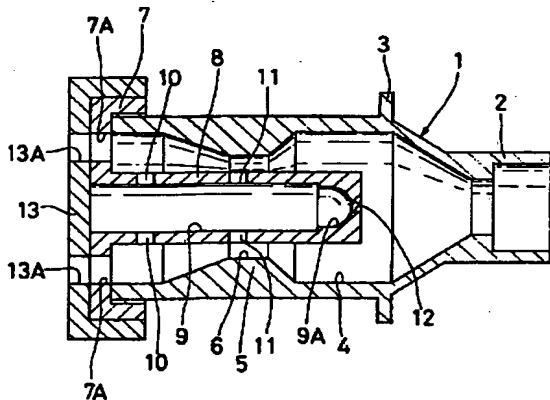
【図 5】第 2 の実施例による吸入式投薬器を示す縦断面図である。

【図 6】カプセル収容部内の顆粒状薬品を吸引している状態の吸入式投薬器を示す図 5 と同様位置の縦断面図である。

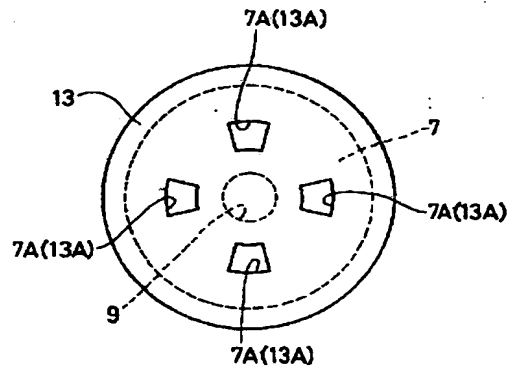
【図 7】第 3 の実施例による吸入式投薬器を示す縦断面図である。

【図 8】各吸気孔と通気孔の形成状態を示す図 7 中の矢示 VIII-VIII 方向横断面図である。

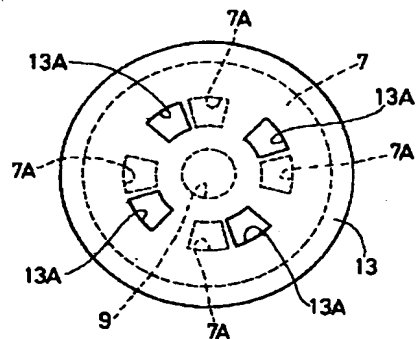
【図 1】



【図 2】



【図 3】



【図 9】カプセル収容部内の顆粒状薬品を吸引している状態の吸入式投薬器を示す図 7 と同様位置の縦断面図である。

【図 10】第 1 の変形例による吸入式投薬器を示す縦断面図である。

【図 11】第 2 の変形例による吸入式投薬器を示す縦断面図である。

【符号の説明】

1, 21, 41, 61 投薬器本体

2, 22, 42 吸入口

4, 25, 44 吸入通路

5, 26, 45 縮径部

6, 27, 46 絞り通路部

8, 63 カプセル収容筒

9, 48 カプセル収容部

10, 49 通気孔

11, 30 吸出し孔 (薬粉吸出し孔)

14 カプセル

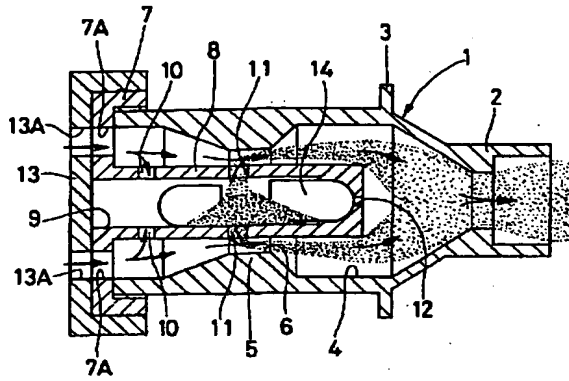
29 空気流入孔

31, 52 ベローズ (送風部)

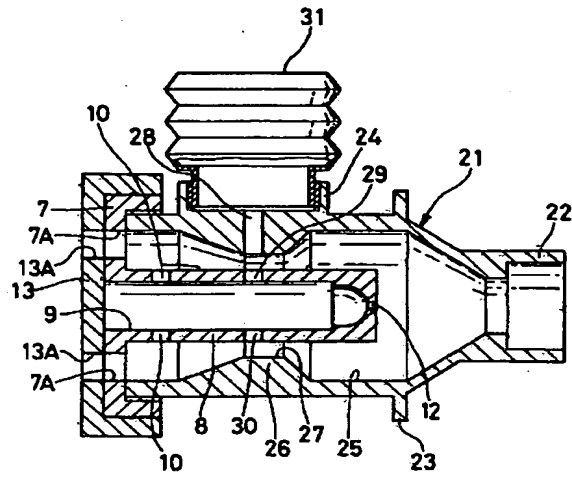
50 吸出し通路 (薬粉吸出し通路)

53, 64, 71 旋回翼

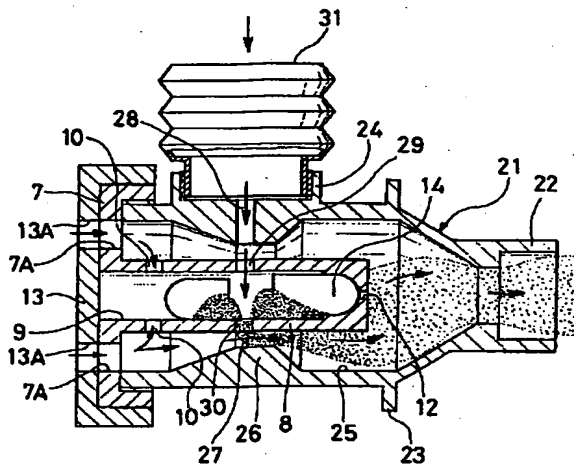
【図 4】



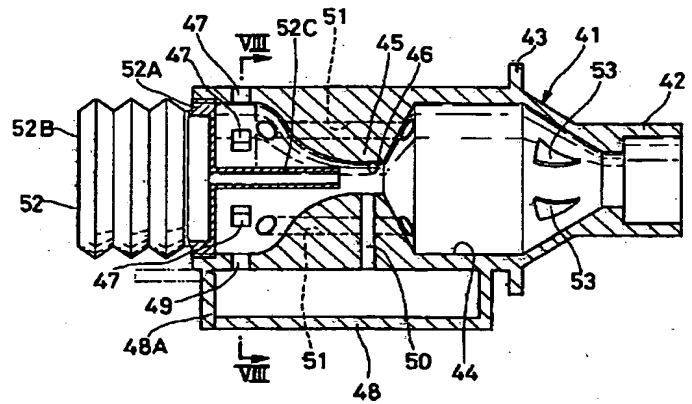
【図 5】



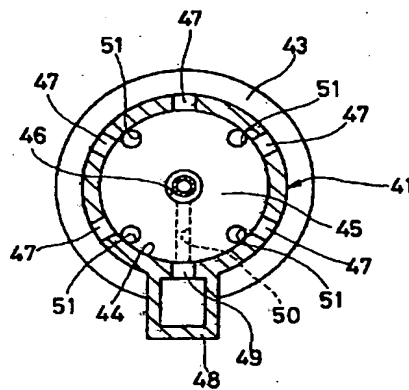
【図 6】



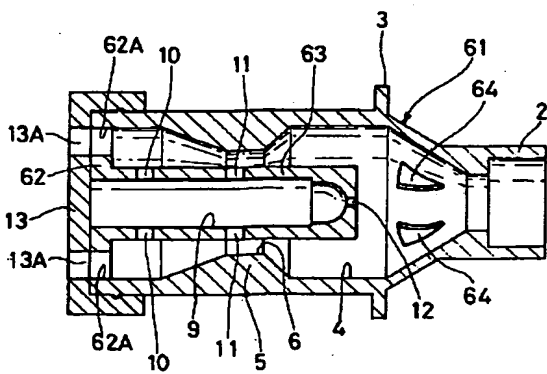
【図 7】



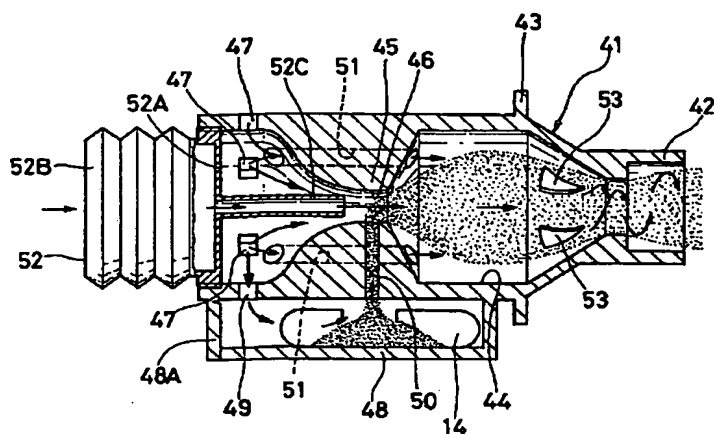
【図 8】



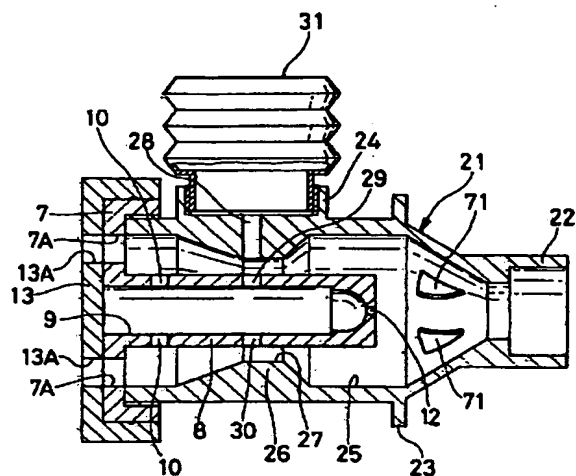
【図 10】



【図 9】



【図 11】



フロントページの続き

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- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] By the sink of a patient's breath, this invention is used for prescribing **** for the patient into lungs, and relates to a suitable inhalation formula medication machine.

[0002]

[Description of the Prior Art] Generally, the method of injecting with a medical fluid, the method of making it attract with a liquid aerosol sprayer, the method of attracting the chemical (for example, particle size of 5-10 micrometers) of the shape of detailed granulation as **** with which it filled up in the capsule by fracturing the capsule concerned, etc. are used for the method of medicating lungs, such as an asthmatic, with a chemical.

[0003] What consisted of a capsule electrode holder with which the inhalation formula medication machine used by the method of attracting the granulation-like chemical with which the capsule was filled up among the chemical medication methods for these asthmatics was formed in the inhalation path of the main part of a medication machine with which the inhalation path was formed, and this main part of a medication machine free [rotation], and a screw which rotates this capsule electrode holder by the airstream at the time of suction is known.

[0004] And in order to medicate a patient with the granulation-like chemical in a capsule using the inhalation formula medication machine constituted in this way, a capsule is set to a capsule electrode holder and a patient absorbs [make / make / it] ***** for the main part of a medication machine in this state. By this, an airstream is generated in an inhalation path, a screw is rotated, and the capsule set to the capsule electrode holder with this screw is rotated. Consequently, with a centrifugal force, it is emitted out of a capsule through the hole beforehand formed in this capsule, it mixes in an airstream, and a patient's lungs are medicated with the granulation-like chemical in a capsule.

[0005]

[Problem(s) to be Solved by the Invention] By the way, with the inhalation formula medication vessel by the conventional technology mentioned above, since a patient generates an airstream, rotates a screw by this airstream and is made to make the granulation-like chemical in a capsule emit by absorbing a breath, unless it absorbs a breath with somewhat sufficient vigor, a screw will not be able to be rotated, and a patient's burden will become large. There is a problem of becoming a very big burden for the patient who has trouble with his lungs like asthma especially.

[0006] Moreover, when a breath is absorbed with sufficient vigor too much and a screw carries out high-speed rotation, the granulation-like chemical in a capsule cannot stick to a capsule inside with a centrifugal force, and a chemical cannot be emitted out of a capsule, but there is a problem that a chemical will remain in a capsule.

[0007] Furthermore, since the capsule electrode holder and the screw are arranged in an inhalation path, the granulation-like chemical emitted from the capsule tends to adhere to this capsule electrode holder or a screw, and there is a problem that washing must be performed frequently.

[0008] this invention aims at having been made in view of the problem of the conventional technology mentioned above, and enabling it to inhale **** in a capsule easily, and offering an

inhalation formula medication machine diffusing **** efficiently in an inhalation airstream and having enabled it to mix it

[0009]

[Means for Solving the Problem] In order to solve the technical problem mentioned above, the inhalation formula medication machine which invention of a claim 1 adopts The main part of a medication machine, and the inhalation path prepared so that this main part of a medication machine might be penetrated to shaft orientations, The diameter reduction section formed so that it might be located in the middle of this inhalation path and the diameter of a path of this inhalation path might be extracted, The inhalation mouth which was located in the outflow side of the aforementioned inhalation path, and was formed in the aforementioned main part of a medication machine, The capsule hold cylinder by which it was elongated and prepared in shaft orientations towards the aforementioned diameter reduction section from the inflow side of the aforementioned inhalation path, and the interior turned into the capsule hold section, In the air hole drilled by this capsule hold cylinder so that it might be located in the inflow side of the aforementioned inhalation path and this inhalation path might be opened for free passage with capsule hold circles, and the aforementioned diameter reduction section and the position which counters **** sucking drilled by the aforementioned capsule hold cylinder so that the aforementioned capsule hold circles might be opened for free passage to the aforementioned inhalation path -- it comes to constitute from a hole

[0010] Moreover, the inhalation formula medication machine which invention of a claim 2 adopts The main part of a medication machine, and the inhalation path prepared so that this main part of a medication machine might be penetrated to shaft orientations, The diameter reduction section formed so that it might be located in the middle of this inhalation path and the diameter of a path of this inhalation path might be extracted, The inhalation mouth which was located in the outflow side of the aforementioned inhalation path, and was formed in the aforementioned main part of a medication machine, The capsule hold cylinder by which it was elongated and prepared in shaft orientations towards the aforementioned diameter reduction section from the inflow side of the aforementioned inhalation path, and the interior turned into the capsule hold section, In the air hole drilled by this capsule hold cylinder so that it might be located in the inflow side of the aforementioned inhalation path and this inhalation path might be opened for free passage with capsule hold circles, and the aforementioned diameter reduction section and the position which counters the airstream ON drilled by the aforementioned capsule hold cylinder so that the aforementioned capsule hold section might be opened for free passage to the aforementioned inhalation path -- a hole and **** sucking -- a hole and this airstream ON -- spouting air towards a hole -- **** sucking, in order to assist sucking of **** from a hole It comes to constitute from the ventilation section prepared in the periphery side of the aforementioned main part of a medication machine.

[0011] Furthermore, you may form the aforementioned main part of a medication machine, and a capsule hold cylinder in one like a claim 3.

[0012] Moreover, it is desirable for it to be located in the inflow side of the aforementioned inhalation path, and to establish this inhalation path for open and the cap who does close in the aforementioned main part of a medication machine like a claim 4.

[0013] The inhalation formula medication machine which invention of a claim 5 adopts further again The main part of a medication machine, and the inhalation path prepared so that this main part of a medication machine might be penetrated to shaft orientations, The diameter reduction section formed so that it might be located in the middle of this inhalation path and the diameter of a path of this inhalation path might be extracted, the inhalation of air formed in the aforementioned main part of a medication machine that the exterior should be opened for free passage the inflow side of the aforementioned inhalation path -- with a hole The inhalation mouth which was located in the outflow side of the aforementioned inhalation path, and was formed in the aforementioned main part of a medication machine, The capsule hold section prepared in the periphery side of the aforementioned main part of a medication machine, and the air hole which is located in the inflow side of the aforementioned inhalation path, and opens an inhalation path for free passage to these capsule hold circles, It is formed in the direction of a

path of this diameter reduction section so that the aforementioned capsule hold section may be opened for free passage to the aforementioned inhalation path in the position of the diameter reduction section. A **** sucking path, It is located in the inflow side of the aforementioned inhalation path, is prepared in the aforementioned main part of a medication machine, and comes to constitute from the ventilation section which spouts air towards the drawing path section of the inhalation path extracted by the diameter reduction section.

[0014] It is desirable to, prepare the inclination wings which form a revolution style within the aforementioned inhalation mouth in the outflow side of the aforementioned inhalation path like a claim 6 on the other hand.

[0015]

[Function] By composition of invention of a claim 1, after holding a capsule in the capsule hold circles of a capsule hold cylinder, this capsule is fractured and internal **** is emitted to these capsule hold circles. if a patient absorbs a breath from an inhalation mouth in this state, while an airstream will occur to an inhalation path -- the diameter reduction section -- the rate of flow -- speeding up -- **** sucking -- a suction force (negative pressure) occurs in a hole **** emitted to capsule hold circles by this -- the aforementioned **** sucking -- it is sucked out of a hole in an inhalation path, and lungs absorb with an inhalation airstream

[0016] Moreover, by composition of invention of a claim 2, after holding a capsule in the capsule hold circles of a capsule hold cylinder, this capsule is fractured and internal **** is emitted to these capsule hold circles. if a patient absorbs a breath from an inhalation mouth in this state, while an airstream will occur to an inhalation path -- the diameter reduction section -- the rate of flow -- speeding up -- **** sucking -- a suction force occurs in a hole **** emitted to capsule hold circles by this -- the aforementioned **** sucking -- it is sucked out of a hole in an inhalation path moreover, this time -- the ventilation section -- pressing -- jet air -- airstream ON -- it flows into capsule hold circles from a hole -- making -- **** of these capsule hold circles -- **** sucking -- extruding from a hole -- **** sucking -- sucking of **** from a hole is assisted Thereby, **** emitted to capsule hold circles is positively emitted in an inhalation path by the extrusion from sucking from an inhalation path side, and capsule hold circles, and is absorbed by lungs with an inhalation airstream by it.

[0017] Furthermore, curtailment of part mark can be aimed at like a claim 3 by forming the aforementioned main part of a medication machine, and a capsule hold cylinder in one.

[0018] Moreover, scattering to the exterior of **** emitted to capsule hold circles is prevented like a claim 4 by blockading the inflow side of an inhalation path with the cap in the medication preparatory work.

[0019] Furthermore, by composition of invention of a claim 5, after holding a capsule in the capsule hold circles of a capsule hold cylinder, this capsule is fractured and internal **** is emitted to these capsule hold circles. if a patient absorbs a breath from an inhalation mouth in this state -- inhalation of air -- air being inhaled by the inhalation path through a hole and an airstream occurring to this inhalation path, by the diameter reduction section, the rate of flow speeds up and a suction force occurs to a **** sucking path Thereby, **** emitted to capsule hold circles is sucked out of the aforementioned **** sucking path in an inhalation path with the air which flows into capsule hold circles from an air hole. Moreover, by pressing the ventilation section at this time and spouting air towards the drawing path section of an inhalation path, the rate of flow of the airstream which circulates the drawing path section is sped up further, and the suction force of a **** sucking path is strengthened. Thereby, **** emitted to capsule hold circles is positively sucked out of a **** sucking path in an inhalation path, and is absorbed by lungs with an inhalation airstream.

[0020] Moreover, **** which is sucked out of the capsule hold section by the composition of a claim 6, and is inhaled with an inhalation airstream by it is mixed in the state where it was spread in the inhalation airstream by the revolution style by inclination wings.

[0021]

[Example] Hereafter, the inhalation formula medication machine by the example of this invention is explained based on drawing 1 or drawing 9.

[0022] First, the 1st example of this invention is shown in drawing 1 or drawing 4.

[0023] the lock out which 1 shows the main part of a medication machine which made the shape of a cylinder mostly in drawing, and the unilateral of this main part 1 of a medication machine mentions later -- it is blockaded by the member 7 Moreover, the diameter of a side besides this main part 1 of a medication machine is reduced, it serves as the inhalation mouth 2, and the flange 3 protrudes on the shaft-orientations pars intermedia of this main part 1 of a medication machine outward [direction of path].

[0024] The inhalation path formed so that the main part 1 of a medication machine might be penetrated to shaft orientations is shown, in the middle of this inhalation path 4, it projects to the sense in the direction of a path, and the diameter reduction section 5 is formed so that the diameter of a path of this inhalation path 4 may be extracted, and 4 forms the drawing path section 6 which generates a venturi operation in the middle of the inhalation path 4 by this.

[0025] the lock out member screwed on the unilateral of the main part 1 of a medication machine removable as the inflow side of the inhalation path 4 blockaded in 7, and 8 -- this lock out -- the inside of the inhalation path 4 is turned to the side else from the center section of the member 7, the capsule hold cylinder elongated and formed in shaft orientations is shown, respectively, and the nose of cam of this capsule hold cylinder 8 is elongated to the side else rather than the diameter reduction section 5 Moreover, the inside of this capsule hold cylinder 8 serves as the capsule hold section 9 which carries out opening towards an unilateral, and the other end (pars basilaris ossis occipitalis) side of this capsule hold section 9 has become maintenance hole 9A holding the capsule 14 mentioned later. on the other hand -- the aforementioned lock out -- the inhalation of air which opens the exterior and the inhalation path 4 for free passage to a member 7 as shown in drawing 2 -- Holes 7A and 7A and -- are formed in four hoop directions

[0026] 10 and 10 are two or more air holes (two pieces are illustrated) which were located in the shaft-orientations unilateral of the capsule hold cylinder 8, and were drilled in the direction of a path, and each of this air hole 10 is opening the inhalation path 4 and the inside of the capsule hold section 9 for free passage.

[0027] 11 and 11 -- each air hole 10 and shaft orientations -- estranging -- the capsule hold cylinder 8 -- on the way -- two or more **** sucking which was alike, was located and was drilled in the direction of a path of this capsule hold cylinder 8 -- sucking used as a hole -- a hole (two pieces are illustrated) -- it is -- this sucking of each -- the hole 11 is arranged so that opening of the inside of the capsule hold section 9 may be carried out to the drawing path section 6 of the inhalation path 4

[0028] 12 is the pin hole drilled at the nose of cam of the capsule hold cylinder 8 by shaft orientations, and the pin (not shown) for removing the capsule 14 held in the capsule hold section 9 after the medication end is inserted in this pin hole 12.

[0029] 13 -- lock out -- a member 7 -- the wrap from an unilateral -- the cap prepared like -- it is -- this cap 13 -- lock out -- while being attached outside a member 7 possible [removable and rotation] -- lock out -- each inhalation of air of a member 7 -- a hole -- four free passages corresponding to 7A -- Holes 13A and 13A and -- are formed thereby, this cap 13 is rotated and it is shown in drawing 2 -- as -- lock out -- each inhalation of air of a member 7 -- a hole -- 7A -- each free passage -- a hole -- by fitting 13A considering as the state where the inhalation path 4 and the exterior were opened for free passage, and rotating a cap 13 in the arbitrary directions from this state -- each inhalation of air -- a hole -- 7A and a free passage -- a hole -- a position with 13A is shifted and the inflow side of the inhalation path 4 is blockaded to the exterior

[0030] The inhalation formula medication machine by this example has the composition like ****, and explains the medication procedure using [next] the inhalation formula medication machine.

[0031] first -- as a medication preparatory work -- the main part 1 of a medication machine -- lock out -- a member 7 is screwed on, and the capsule 14 by which the granulatio-like chemical as **** was filled up with this state in the capsule hold section 9 of the capsule hold cylinder 8 is held from an unilateral so that it may fit into maintenance hole 9A and the lock out after fracturing the capsule 14 held in the capsule hold section 9 and making an internal granulatio-like chemical emit in this capsule hold section 9 -- a cap 13 is fitted into a member 7 and the

capsule hold section 9 is lidded moreover, at the time of anchoring of this cap 13, it was shown in drawing 3 -- as -- each free passage of this cap 13 -- a hole -- 13A -- lock out -- each inhalation of air of a member 7 -- a hole -- it prevents that a granulatio-like chemical disperses outside in a preparatory work by fitting in so that it may shift with 7A

[0032] next -- if a preparatory work is completed -- a cap 13 -- lock out -- it is made to rotate to a member 7 and is shown in drawing 1 and drawing 2 -- as -- each free passage -- a hole -- 13A -- each inhalation of air -- a hole -- 7A is made to suit and opening of the inflow side of the inhalation path 4 is made to carry out outside and this state -- a patient -- a mouth -- the inhalation mouth 2 -- **** -- when a breath is absorbed lightly, it is shown in drawing 4 -- as -- each free passage -- hole 13A and each inhalation of air -- a hole -- through 7A, in the inhalation path 4, the open air is attracted and it flows

[0033] each sucking which was formed in the diameter reduction section 5, the air (inhalation airstream) which flows in the inhalation path 4 at this time circulating towards an outflow side (others -- a side) from an inflow side (unilateral) and which it extracted, and the rate of flow was sped up by the path section 6, and carried out opening to this drawing path section 6 by venturi operation -- a hole 11 is made to generate a suction force (negative pressure)

[0034] and each sucking -- when a suction force occurs in a hole 11, in the capsule hold section 9, air is inhaled through each air hole 10, and the granulatio-like chemical emitted by this inhaled air in the capsule hold section 9 can wind up consequently, a granulatio-like chemical -- each aforementioned sucking -- the suction force of a hole 11 -- this sucking of each -- since it is sucked out of a hole 11 by the drawing path section 6 of the inhalation path 4 with air, the inhalation path 4 is mixed in the circulating inhalation airstream and it absorbs in a patient's lungs, a patient can inhale a granulatio-like chemical in lungs only by absorbing a breath lightly

[0035] According to this example, in this way by extracting the rate of flow of the air which circulates the inhalation path 4, and speeding up by the path section 6 a venturi operation -- each sucking -- a suction force is generated in a hole 11 -- making -- this sucking of each, since the granulatio-like chemical emitted in the capsule hold section 9 through the hole 11 is sucked out in the inhalation path 4 and it is made to make it inhale in lungs with an airstream While being able to inhale a granulatio-like chemical effectively only by absorbing a breath lightly, the granulatio-like chemical in a capsule 14 can be efficiently inhaled in one inhalation operation, and a patient's burden can be reduced sharply.

[0036] moreover, a venturi operation -- each sucking -- since make a hole 11 generate a suction force and it is making suck out a granulatio-like chemical, adhesion of the granulatio-like chemical to each part can reduce as compared with the inhalation formula medication machine stated with the conventional technology, while being able to attract efficiently the granulatio-like chemical mixed in the airstream, washing of the inhalation formula medication machine concerned can simplify, and handling can make easy

[0037] Furthermore, since it is made to suck out a granulatio-like chemical in a venturi operation, neither a capsule electrode holder nor a screw can be needed like the inhalation formula medication machine stated with the conventional technology, but part mark can be lessened, and reduction of assembly-operation nature or a manufacturing cost can be aimed at.

[0038] Next, the 2nd example of this invention is shown in drawing 5 and drawing 6. In addition, in this example, the same sign shall be given to the same component as the 1st example shown in drawing 1 or drawing 4 mentioned above, and the explanation shall be omitted.

[0039] In drawing, 21 shows the main part of a medication machine by this example. this main part 21 of a medication machine It is blockaded by the member 7. the main part 1 of a medication machine stated in the 1st example of the above -- almost -- the same -- the unilateral -- lock out -- Although the diameter of the side else is reduced, it becomes the inhalation mouth 22 and the flange 23 protrudes on shaft-orientations pars intermedia outward [direction of path], the tubed attachment section 24 by which the bellows 31 mentioned later is attached in the periphery side of this main part 21 of a medication machine protrudes outward [direction of path].

[0040] 25 is the inhalation path formed so that the main part 21 of a medication machine might be penetrated to shaft orientations, like the inhalation path 4 stated in the 1st example of the

above, it extracts in the middle of this inhalation path 25 by the diameter reduction section 26, and it serves as the path section 27.

[0041] It is the air duct formed in the direction of a path at the diameter reduction section 26 of the main part 21 of a medication machine so that one side may carry out opening of 28 into the attachment section 24 and another side may carry out opening to the drawing path section 27 of the inhalation path 25, and this air duct 28 is spouted towards the air incurrent pore 29 which mentions later the air supplied from bellows 31.

[0042] The air incurrent pore which estranged 29 to each air hole 10 and shaft orientations, was located in the middle of the capsule hold cylinder 8, and was drilled in the direction of a path of this capsule hold cylinder 8, 30 -- this airstream ON -- **** sucking drilled in the direction of a path of the capsule hold cylinder 8 in the hole 29 and the position which counters -- sucking used as a hole -- a hole -- respectively -- being shown -- this airstream ON -- a hole 29 is arranged in the inside bottom of drawing which becomes an air duct 28 side -- having -- sucking -- the hole 30 is arranged in the inside bottom of drawing and this airstream ON -- a hole 29 and sucking -- the hole 30 is opening the capsule hold section 9 for free passage in the drawing path section 27 of the inhalation path 25, respectively

[0043] 31 is the bellows as the ventilation section which was located in the periphery side of the main part 21 of a medication machine, and was screwed on the attachment section 24. This bellows 31 is what spouts the air stored in the interior by being pressed from an outside towards the air incurrent pore 29 through an air duct 28. Suck out the granulatio-like chemical in the capsule hold section 9 by this, and press to a hole 30 side, a granulatio-like chemical is made to suck out positively, and the time of a patient absorbing a chemical is assisted.

[0044] The inhalation formula medication machine by this example has the composition like ****, and explains the medication procedure using [next] the inhalation formula medication machine. In addition, since there are not what is depended on the 1st example mentioned above about the medication preparatory work, and a changing place, it omits.

[0045] first -- if a preparatory work is completed -- a cap 13 -- lock out -- it rotates to a member 7 -- making -- each free passage -- a hole -- 13A -- each inhalation of air -- a hole -- 7A is made to suit and opening of the inflow side of the inhalation path 25 is made to carry out outside

[0046] And if a patient **** and is light in the inhalation mouth 2 and absorbs a breath by the mouth in this state The open air is attracted in the inhalation path 25 through 7A, and it flows. it is shown in drawing 6 -- as -- each free passage -- hole 13A and each inhalation of air -- a hole -- The rate of flow is sped up by the drawing path section 27, and this air that flowed sucks out the granulatio-like chemical which carried out opening to this drawing path section 27 by venturi operation and which sucked out, and the hole 30 was made to generate a suction force (negative pressure), and was emitted in the capsule hold section 9 to the inhalation path 25 side.

[0047] Moreover, a patient presses bellows 31 simultaneously with the sink of the breath mentioned above, and makes a supplementary air style blow off from this bellows 31 towards the air incurrent pore 29 through an air duct 28, and it presses so that the granulatio-like chemical in the capsule hold section 9 may be sucked out and it may extrude from a hole 30 with this air.

[0048] Consequently, that the time of a patient absorbing a breath should be assisted, the granulatio-like chemical in the capsule hold section 9 blows off from bellows 31, is sucked out by the supplementary air style which flows in the capsule hold section 9 through the air incurrent pore 29, and is pressed towards a hole 30 while it sucks out and being sucked out by the suction force of a hole 30 at the inhalation path 25 side. It is positively sucked out in the inhalation path 25 through a hole 30. therefore, a granulatio-like chemical -- each air hole 10 and airstream ON -- the air which flows from a hole 29 -- the aforementioned sucking out of the capsule hold section 9 -- Since the inhalation path 25 is mixed in the circulating inhalation airstream and it absorbs in a patient's lungs, a patient can inhale a granulatio-like chemical in lungs only by absorbing a breath lightly, pressing bellows 31 and generating a supplementary air style.

[0049] According to this example, it adds to the operation effect of the 1st example mentioned above in this way. Make a supplementary air style blow off from bellows 31 towards the air

incurrent pore 29 through an air duct 28. Since the granulatio-like chemical in the capsule hold section 9 is sucked out by this airstream, and it presses to a hole 30 side and is made to assist sucking, the granulatio-like chemical emitted in this capsule hold section 9 can be positively sucked out by the inhalation path 25 side, and a patient's burden can be reduced further.

[0050] Next, the 3rd example of this invention is shown in drawing 7 or drawing 9.

[0051] In drawing, 41 shows the main part of a medication machine by this example mostly formed in the shape of a cylinder, and the below-mentioned bellows 52 is attached in the unilateral of this main part 1 of a medication machine. Moreover, the diameter of a side besides this main part 41 of a medication machine is reduced, it serves as the inhalation mouth 42, and the flange 43 protrudes on the shaft-orientations pars intermedia of this main part 41 of a medication machine outward [direction of path].

[0052] The inhalation path formed so that the main part 41 of a medication machine might be penetrated to shaft orientations is shown, in the middle of this inhalation path 44, the diameter reduction section 45 projected by the sense in the direction of a path is formed so that the diameter of a path of this inhalation path 44 may be extracted, and 44 forms the drawing path section 46 which generates a venturi operation in the middle of the inhalation path 44 by this.

[0053] two or more inhalation of air which 47, 47, and -- were located in the inflow side of the inhalation path 44, and was formed in the main part 41 of a medication machine -- a hole -- it is -- each of this inhalation of air -- a hole 47 is formed so that opening may be mostly carried out to a hoop direction in the direction of a path at equal intervals, and it is making the inhalation path 44 open for free passage outside, as shown in drawing 8

[0054] 48 is the capsule hold section of the shape of an enclosed type prepared in the periphery side of the main part 41 of a medication machine in one, and the unilateral side of this capsule hold section 48 is set to covering device 48A in which close [open and close] are possible, and it holds a capsule 14 in the capsule hold section 48 through this covering device 48A.

[0055] the air hole to which 49 opens the inflow side of the inhalation path 44 for free passage in the capsule hold section 48 -- it is -- this air hole 49 -- each inhalation of air -- a part of air inhaled from a hole 47 at the inhalation path 44 is made to flow in the capsule hold section 48

[0056] It is a sucking path used as the **** sucking path formed in the direction of a path of the diameter reduction section 45 of the main part 41 of a medication machine so that one side may carry out opening of 50 into the capsule hold section 48 and another side may carry out opening to the drawing path section 46 of the inhalation path 44, and this sucking path 50 is sucked out to the drawing path section 46 side of the inhalation path 44 with the suction force according the granulatio-like chemical emitted in the capsule hold section 48 to a venturi operation.

[0057] 51, 51, and -- are four auxiliary-ventilation ways drilled so that the diameter reduction section 45 might be penetrated to shaft orientations, and each of this auxiliary-ventilation way 51 reduces a patient's burden by guaranteeing the flow of air when a patient absorbs a breath.

[0058] 52 is the bellows as the ventilation section which was located in the inflow side of the inhalation path 44, and was attached in the main part 41 of a medication machine. this bellows 52 It consists of base 52A of the shape of **** screwed on the main part 41 of a medication machine, main part of bellows 52B of the shape of bellows which fixed to this base 52A, and discharge-tube 52C elongated from the center of the aforementioned base 52A to shaft orientations towards the drawing path section 46 of the inhalation path 44. And by pressing the main part of bellows 52B, this bellows 52 extracts the air stored in this main part of bellows 52B from aforementioned discharge-tube 52C, blows off towards the path section 46, and assists the time of raising a venturi operation by speeding up the rate of flow of the air in this drawing path section 46, and a patient absorbing a chemical.

[0059] On the other hand, 53 and 53 are the swirlers (two sheets are illustrated) of two or more sheets prepared in the outflow side of the inhalation path 44 by being located, and each of this swirler 53 has curvature in the revolution direction, and inclines. Thereby, each of this swirler 53 makes it circle in the air and the granulatio-like chemical which circulate the outflow side of the inhalation path 44, diffuses a granulatio-like chemical in an airstream effectively, and mixes it.

[0060] The inhalation formula medication machine by this example has the composition like ****, and explains the medication procedure using [next] the inhalation formula medication machine.

[0061] First, as a medication preparatory work, covering device 48A is opened, a capsule 14 is held in the capsule hold section 48, and after fracturing a capsule 14 within this capsule hold section 48, the aforementioned covering device 48A is closed.

[0062] next -- if a preparatory work is completed -- this state -- a patient -- a mouth -- the inhalation mouth 42 -- **** -- when a breath is absorbed lightly, it is shown in drawing 9 -- as -- each inhalation of air -- through a hole 47, in the inhalation path 44, the open air is attracted and it flows

[0063] this time -- each inhalation of air -- the air (inhalation airstream) which flows in the inhalation path 44 from a hole 47 -- each of this inhalation of air -- circulating towards the inhalation mouth 42 from a hole 47, the rate of flow was sped up by the drawing path section 46, and opening was carried out to this drawing path section 46 by venturi operation -- it sucks out and a path 50 is made to generate a suction force (negative pressure)

[0064] And when a suction force occurs to each sucking path 50, in the capsule hold section 48, air is inhaled through an air hole 49 and the granulation-like chemical emitted by this inhaled air in the capsule hold section 48 can wind up. Consequently, a granulation-like chemical is sucked out of each of this sucking path 50 by the suction force of each aforementioned sucking path 50 with air at the drawing path section 46 of the inhalation path 44.

[0065] Moreover, by pressing main part of bellows 52B of bellows 52 simultaneously with the sink of the breath mentioned above, extracting from discharge-tube 52C, and making a supplementary air style blow off towards the path section 46, a patient raises further the rate of flow of the airstream which circulates this drawing path section 46, increases the suction force of the sucking path 50 by venturi operation, and assists the time of a sink.

[0066] Therefore, since the granulation-like chemical in the capsule hold section 48 is efficiently sucked out by the sucking path 50 which has a big suction force at the inhalation path 44 side, this inhalation path 44 is mixed in the circulating inhalation airstream and it absorbs in a patient's lungs, a patient can inhale a granulation-like chemical in lungs only by absorbing a breath lightly, pressing bellows 52.

[0067] Since the suction force by venturi operation of the sucking path 50 can be heightened in this way by speeding up further the rate of flow of the air which circulates the drawing path section 46 of the inhalation path 44 with bellows 52 according to this example, a patient's burden can be reduced more.

[0068] in addition -- the 1st example of the above -- the capsule hold cylinder 8 -- the main part 1 of a medication machine, and another object -- preparing -- lock out, although stated as what is attached in this main part 1 of a medication machine through a member 7 like the 1st modification which shows this invention to not only this but drawing 10 -- the inflow side of the main part 61 of a medication machine -- four inhalation of air -- by forming Holes 62A and 62A and the bottom 62 which has --, and forming the capsule hold cylinder 63 in the center of this bottom 62 You may make it form the main part 61 of a medication machine, and the capsule hold cylinder 63 in one. Moreover, the same is said of the 2nd example.

[0069] Furthermore, although the 3rd example of the above described as what forms the swirlers 53 and 53 of two or more sheets in the outflow side of the inhalation path 44 You may make it form the same swirlers 64 and 64 as each aforementioned swirler 53 in the inhalation path 4 of the inhalation formula medication machine stated in the 1st example like the 1st modification shown in drawing 10 mentioned above. Moreover, you may make it form swirlers 71 and 71 in the inhalation path 25 of the inhalation formula medication machine stated in the 2nd example like the 2nd modification shown in drawing 11 .

[0070] moreover -- the 2nd example of the above -- **** sucking -- sucking used as a hole -- although the case where one hole 30 was drilled was illustrated -- this sucking -- you may make it form two or more holes 30

[0071]

[Effect of the Invention] According to invention of a claim 1, as explained in full detail above, after holding a capsule in the capsule hold circles of a capsule hold cylinder, this capsule is fractured and internal **** is emitted to these capsule hold circles. when a patient absorbs a breath from an inhalation mouth in this state, while generating an airstream to an inhalation path

-- the diameter reduction section -- the rate of flow -- speeding up -- **** sucking -- a suction force (negative pressure) is generated in a hole **** emitted to capsule hold circles by this -- the aforementioned **** sucking -- it can suck out of a hole in an inhalation path, lungs can be inhaled with an inhalation airstream, and a patient's burden can be reduced moreover, the venturi operation by the inhalation path -- **** sucking -- since a hole is made to generate a suction force and it is made to suck out ****, **** can be efficiently inhaled upwards in one inhalation operation, the part mark of an inhalation medication machine can be cut down, composition can be simplified, and improvement in assembly-operation nature and reduction of a manufacturing cost can be aimed at

[0072] Moreover, according to invention of a claim 2, after holding a capsule in the capsule hold circles of a capsule hold cylinder, this capsule is fractured and internal **** is emitted to these capsule hold circles. when a patient absorbs a breath from an inhalation mouth in this state, while generating an airstream to an inhalation path -- the diameter reduction section -- the rate of flow -- speeding up -- **** sucking -- a suction force is generated in a hole **** emitted to capsule hold circles by this -- the aforementioned **** sucking -- it sucks out of a hole in an inhalation path moreover, this time -- the ventilation section -- pressing -- air -- blowing off -- this supplementary air style -- airstream ON -- it flows into capsule hold circles from a hole -- making -- **** of these capsule hold circles -- **** sucking -- by extruding from a hole **** emitted to capsule hold circles can be positively emitted in an inhalation path by the extrusion from sucking from an inhalation path side, and capsule hold circles, lungs can be inhaled with an inhalation airstream, and a patient's burden can be reduced more. moreover, the venturi operation by the inhalation path -- chemical sucking -- since a hole is made to generate a suction force and it is made to suck out ****, **** can be efficiently inhaled in one inhalation operation

[0073] Furthermore, like a claim 3, by forming the aforementioned main part of a medication machine, and a capsule hold cylinder in one, curtailment of part mark can be aimed at and reduction of a manufacturing cost can be aimed at.

[0074] Moreover, like a claim 4, by blockading the inflow side of an inhalation path with the cap in the medication preparatory work, it can prevent that **** emitted to capsule hold circles disperses outside, and the chemical of the specified quantity can be certainly prescribed for the patient.

[0075] Furthermore, according to invention of a claim 5, after holding a capsule in the capsule hold circles of a capsule hold cylinder, this capsule is fractured and internal **** is emitted to these capsule hold circles. a patient absorbs a breath from an inhalation mouth in this state -- inhalation of air -- inhaling air to an inhalation path through a hole, and generating an airstream to this inhalation path, by the diameter reduction section, the rate of flow is sped up and a suction force is generated to a **** sucking path. Thereby, **** emitted to capsule hold circles is sucked out of the aforementioned **** sucking path in an inhalation path with the air which flows into capsule hold circles from an air hole. Moreover, by pressing the ventilation section at this time, blowing off a supplementary air style towards the drawing path section of an inhalation path, speeding up further the rate of flow of the airstream which circulates the drawing path section, and strengthening the suction force of a **** sucking path, **** emitted to capsule hold circles can be made to be able to suck out of a **** sucking path in an inhalation path positively, lungs can be inhaled with an inhalation airstream, and a patient's burden can be reduced further. Moreover, since a **** sucking path is made to generate a suction force in the venturi operation by the inhalation path and it is made to suck out ****, **** can be efficiently inhaled in one inhalation operation.

[0076] Moreover, since **** which is sucked out of the capsule hold section by the composition of a claim 6, and is inhaled with an inhalation airstream by it can be made to diffuse and mix into an inhalation airstream by the revolution style by inclination wings, a chemical can be efficiently prescribed for the patient into lungs.

[Translation done.]

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

 CLAIMS

[Claim(s)]

[Claim 1] The main part of a medication machine, and the inhalation path prepared so that this main part of a medication machine might be penetrated to shaft orientations, The diameter reduction section formed so that it might be located in the middle of this inhalation path and the diameter of a path of this inhalation path might be extracted, The inhalation mouth which was located in the outflow side of the aforementioned inhalation path, and was formed in the aforementioned main part of a medication machine, The capsule hold cylinder by which it was elongated and prepared in shaft orientations towards the aforementioned diameter reduction section from the inflow side of the aforementioned inhalation path, and the interior turned into the capsule hold section, In the air hole drilled by this capsule hold cylinder so that it might be located in the inflow side of the aforementioned inhalation path and this inhalation path might be opened for free passage with capsule hold circles, and the aforementioned diameter reduction section and the position which counters **** sucking drilled by the aforementioned capsule hold cylinder so that the aforementioned capsule hold circles might be opened for free passage to the aforementioned inhalation path -- the inhalation formula medication machine which it comes to constitute from a hole

[Claim 2] The main part of a medication machine, and the inhalation path prepared so that this main part of a medication machine might be penetrated to shaft orientations, The diameter reduction section formed so that it might be located in the middle of this inhalation path and the diameter of a path of this inhalation path might be extracted, The inhalation mouth which was located in the outflow side of the aforementioned inhalation path, and was formed in the aforementioned main part of a medication machine, The capsule hold cylinder by which it was elongated and prepared in shaft orientations towards the aforementioned diameter reduction section from the inflow side of the aforementioned inhalation path, and the interior turned into the capsule hold section, In the air hole drilled by this capsule hold cylinder so that it might be located in the inflow side of the aforementioned inhalation path and this inhalation path might be opened for free passage with capsule hold circles, and the aforementioned diameter reduction section and the position which counters the airstream ON drilled by the aforementioned capsule hold cylinder so that the aforementioned capsule hold section might be opened for free passage to the aforementioned inhalation path -- a hole and **** sucking -- a hole and this airstream ON -- spouting air towards a hole -- **** sucking, in order to assist sucking of **** from a hole The inhalation formula medication machine which it comes to constitute from the ventilation section prepared in the periphery side of the aforementioned main part of a medication machine.

[Claim 3] The inhalation formula medication machine according to claim 1 or 2 which comes to form the aforementioned main part of a medication machine, and a capsule hold cylinder in one.

[Claim 4] The inhalation formula medication machine according to claim 1, 2, or 3 which is located in the inflow side of the aforementioned inhalation path, and comes to establish this inhalation path open and the cap who does close in the aforementioned main part of a medication machine.

[Claim 5] The main part of a medication machine, and the inhalation path prepared so that this main part of a medication machine might be penetrated to shaft orientations, The diameter

reduction section formed so that it might be located in the middle of this inhalation path and the diameter of a path of this inhalation path might be extracted, the inhalation of air formed in the aforementioned main part of a medication machine that the exterior should be opened for free passage the inflow side of the aforementioned inhalation path -- with a hole The inhalation mouth which was located in the outflow side of the aforementioned inhalation path, and was formed in the aforementioned main part of a medication machine, The capsule hold section prepared in the periphery side of the aforementioned main part of a medication machine, and the air hole which is located in the inflow side of the aforementioned inhalation path, and opens an inhalation path for free passage to these capsule hold circles, It is formed in the direction of a path of this diameter reduction section so that the aforementioned capsule hold section may be opened for free passage to the aforementioned inhalation path in the position of the diameter reduction section. A **** sucking path, The inhalation formula medication machine which it comes to constitute from the ventilation section which spouts air towards the drawing path section of the inhalation path which was located in the inflow side of the aforementioned inhalation path, was established in the aforementioned main part of a medication machine, and was extracted by the diameter reduction section.

[Claim 6] The inhalation formula medication machine according to claim 1, 2, 3, 4, or 5 which comes to prepare the inclination wings which form a revolution style within the aforementioned inhalation mouth in the outflow side of the aforementioned inhalation path.

[Translation done.]